TEST RECORDS

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

CONTENT

PART 1 TEST INFORMATION 3

1 Auxiliary Facilities Supporting Tests 4

2 Main Measurement Instruments 5

PART 2 TEST PLANS 6

1 Test Environments 7

2 Test Configurations 8

PART 3 TEST RESULTS 10

Test Item 1 Adjacent signal selectivity 11

1 Result Table 12

2 Test Plot 14

Test Item 2 Spurious emission 15

1 Result Table 16

2 Test Plot 17

3 Photos of Test Setups 26

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

PART 1

TEST INFORMATION

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

1 Auxiliary Facilities Supporting Tests

NOTE: The EUT was tested together with other necessary auxiliary facilities so as to form representative EUT installation configurations and test setup configurations during the tests.

Facility	Manufacturer	Model	Identification	Remark
Control Software	HUAWEI	Web Local maintenance terminal	BTS3900 V100R012C10SPC000B1L2	Man-machine language (MML) tool to read C/N0.
GPS Receiver Manufactured Board	HUAWEI	WD22UGRC	---	Part of the host of the GUE
Universal Main Processing & Transmission unit (UMPT)	HUAWEI	WD22MPTXG1	023CUY9WFA100036	Part of the host of the GUE
Distributed Base Station Base Band Unit (BBU)	HUAWEI	QWLM1BBU2	210231584810980 32503	Part of the host of the GUE
HERT BBU Box	HUAWEI	WD2BBBUC	21021127226T980 15224	Part of the host of the GUE
2U Fan Module	HUAWEI	WD2E1FAN	21021204589T980 12838	Part of the host of the GUE
-48V Power and Environment interface Unit	HUAWEI	WD2MUPEUA	21023155286TA7 000453	Part of the host of the GUE
BBU slot dummy panel	HUAWEI	---	---	Part of the host of the GUE, 7 pieces
BBU power slot dummy panel	HUAWEI	---	---	Part of the host of the GUE, 1 piece
50 Ohm Load	Agilent	909D	51315	Antenna port load used for radiated – cabinet

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2 Main Measurement Instruments

NOTE 1: NCR = No calibration required, VOU = Verified on use.

NOTE 2: Unless otherwise specified, the calibration intervals for test instruments were Annual (per year). The other intervals, if applicable, are marked with (##y), which denotes ## years calibration interval.

2.1 Current Test Project/Report

Equipment Name	Manufacturer	Model	Serial Number	Cal. Due
Conducted				
Spectrum Analyzer	Keysight	N9020A	MY55400471	2017-09-14
GNSS Signal Generator	Agilent	E4438C	MY49071538	2017-12-14
GNSS Signal Generator	Spirent	GSS6700	61201503	2017-09-28
AWGN Signal Generator	R&S	SMW200A	102101	2017-08-08
RFATS	HUAWEI	V2.0	---	NCR
Radiated				
Spectrum Analyzer	R&S	FSV40	100960	2018-02-13
Bilog Antenna (30M-1GHz)	Schaffner	CBL 6112B	2536	2017-08-14 (2y)
Horn Antenna (1G-18GHz)	R&S	HF906	359287/005	2018-02-26 (2y)
EMC32 Software	R&S	V8.5.1	---	NCR

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

PART 2

TEST PLANS

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

1 Test Environments

NOTE: The values used in tests may be stringent than that of declared.

Environment Parameter #	Temperature	Voltage	Relative Humidity
NTNV	Ambient	Powered by host	Ambient

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2 Test Configurations

2.1 For test item 1 – Adjacent signal selectivity

<table>
<tr><td>Configuration</td><td>Description</td></tr>
<tr><td>Test method &
Test setup</td><td>☒ Conducted
☐ Radiated</td></tr>
<tr><td>Test environment</td><td>NTNV</td></tr>
<tr><td>GNSS signal settings</td><td>Note 1: The GNSS, GNSS signals and RNSS frequency bands are based on EN 303 413, Table 4-1. The signal levels are based on EN 303 413, Table B-3, B-2 and B-1.
Note 2: According to EN 303 413, B.2.3, in the case of BDS at least one MEO satellite shall be used, and in the case of GLONASS at a minimum Channel 6 satellite shall be used. These mandatory requirements are marked with (*).

1. Referenced GNSS when more than one GNSS is supported:
<table>
<tr><th>Ref</th><th>GNSS system</th><th>Relative level for multiple GNSSs [dB]</th><th>Maximum level [dBm]</th><th>Relative signal levels between signal types per GNSS</th></tr>
<tr><td>☐</td><td>BDS</td><td>-4.5</td><td>-133</td><td>B1I, D1 (1561.098 MHz): 0 dB
B1I, D2 (1561.098 MHz): +5 dB</td></tr>
<tr><td>☐</td><td>Galileo</td><td>+1.5</td><td>-127</td><td>E1 (1575.42 MHz): 0 dB
E6 (1278.75 MHz): +2 dB
E5 (1191.795 MHz): +2 dB</td></tr>
<tr><td>☐</td><td>GLONASS</td><td>-2.5</td><td>-131</td><td>G1 (1598.0625-1605.375 MHz): 0 dB
G2 (1242.9375-1248.625 MHz): -6 dB</td></tr>
<tr><td>☒</td><td>GPS</td><td>0</td><td>-128.5</td><td>L1 C/A (1575.42 MHz): 0 dB
L1C (1575.42 MHz): +1.5 dB
L2C (1227.6 MHz): -1.5 dB
L5 (1176.45 MHz): +3.6 dB</td></tr>
<tr><td>☐</td><td>SBAS</td><td>-2.5</td><td>-131</td><td>L1: 0 dB
L5: (not defined)</td></tr>
</table>
2. Signal settings for signal type(s) per GNSS:
<table>
<tr><th>GNSS signal config. #</th><th>GNSS system</th><th>RNSS band [MHz]</th><th>Signal type</th><th>Signal frequency [MHz]</th><th>Remark</th></tr>
<tr><td>BDS_B1I</td><td>BDS</td><td>1559-1610</td><td>B1I D1</td><td>1561.098</td><td>MEO (*)</td></tr>
<tr><td>GLO_G1</td><td>GLONASS</td><td>1559-1610</td><td>G1</td><td>1605.375</td><td>Channel 6 (*)</td></tr>
<tr><td>GPS_L1</td><td>GPS</td><td>1559-1610</td><td>L1 C/A</td><td>1575.42</td><td></td></tr>
</table></td></tr>
</table>

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2.2 For test item 2 – Spurious emission

<table>
<tr><th>Configuration</th><th>Description</th></tr>
<tr><td>Test method &
Test setup</td><td>☐ For the case of GUE with integral antenna and no temporary antenna connector:
Radiated – cabinet and antenna
☒ For other cases:
Conducted & Radiated – cabinet (with load to antenna connector)</td></tr>
<tr><td>Test environment</td><td>NTNV</td></tr>
<tr><td>GNSS signal
settings</td><td>1. GNSS signal present:
☐ Present (GUE receiver activated by GNSS signal(s))
☒ Absent (GUE in receive-only operating mode)
2. Signal settings for signal type(s) per GNSS:
<table>
<tr><th>GNSS signal config. #</th><th>GNSS system</th><th>RNSS band [MHz]</th><th>Signal type</th><th>Signal level [dBm]</th><th>Remark</th></tr>
<tr><td>RX</td><td>---</td><td>--</td><td>---</td><td>---</td><td>Receive only, any GNSS function activated</td></tr>
</table>
</td></tr>
</table>

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

PART 3

TEST RESULTS

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

Test Item 1

Adjacent signal selectivity

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

1 Result Table

NOTE 1: In the following table(s), the “NA” denotes “Not applicable”, the “NT” denotes “Not tested”, and “NC” denotes “No conclusion”.

NOTE 2: In the following table(s), the settings of columns of “Adjacent signal” are based on EN 303 413, Table 4-2, and the settings of columns of “GNSS” are from test plan.

1.1 1559-1610 MHz band

Frequency band	Adjacent signal		GNSS		Measured C/N0				Remark
	Center frequency	Power level	Signal config.#	Signal level	No interfering	With interfering	Decrease of C/N0	Decrease ≤ 1 dB?	
[MHz]	[MHz]	[dBm]		[dBm]	[dB-Hz]	[dB-Hz]	[dB]		
1518-1525	1524	-65	GPS_L1	-132	53	53	0	Pass	Satellite#1
			GLO_G1	-134.5	45	45	0	Pass	Satellite#255
			BDS_B1I	-136.5	40	40	0	Pass	Satellite#1
1525-1549	1548	-95	GPS_L1	-132	53	53	0	Pass	Satellite#1
			GLO_G1	-134.5	45	45	0	Pass	Satellite#255
			BDS_B1I	-136.5	40	40	0	Pass	Satellite#1
1549-1559	1554	-105	GPS_L1	-132	53	53	0	Pass	Satellite#1
			GLO_G1	-134.5	45	45	0	Pass	Satellite#255
			BDS_B1I	-136.5	40	40	0	Pass	Satellite#1
1559-1610	GUE RNSS band under test								
1610-1626	1615	-105	GPS_L1	-132	53	53	0	53	Satellite#1
			GLO_G1	-134.5	45	45	0	Pass	Satellite#255
			BDS_B1I	-136.5	40	40	0	Pass	Satellite#1
1626-1640	1627	-85	GPS_L1	-132	53	53	0	53	Satellite#1
			GLO_G1	-134.5	45	45	0	Pass	Satellite#255
			BDS_B1I	-136.5	40	40	0	Pass	Satellite#1

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

1.2 1164-1300 MHz band (1164-1215 MHz and 1215-1300 MHz band)

(Not applicable – not supported GNSS band)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2 Test Plot

(No plots supplied for this test item)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

Test Item 2

Spurious emission

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

1 Result Table

NOTE: According to the clause 1 (Scope) of ETSI EN 303 413, this test item applies to the GUE only. For other systems that include a GNSS receiver, the requirements of the most appropriate harmonized standard for that type of equipment apply.

1.1 Conducted

GNSS signal config. #	Frequency range	Maximum emission level	Verdict
RX	30 MHz to 1 GHz	< -57 dBm @ 100 kHz	Pass
RX	1 GHz to 8.3 GHz	< -47 dBm @ 1 MHz	Pass

1.2 Radiated

GNSS signal config. #	Frequency range	Maximum emission level	Verdict
RX	30 MHz to 1 GHz	< -57 dBm @ 100 kHz	Pass
RX	1 GHz to 8.3 GHz	< -47 dBm @ 1 MHz	Pass

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

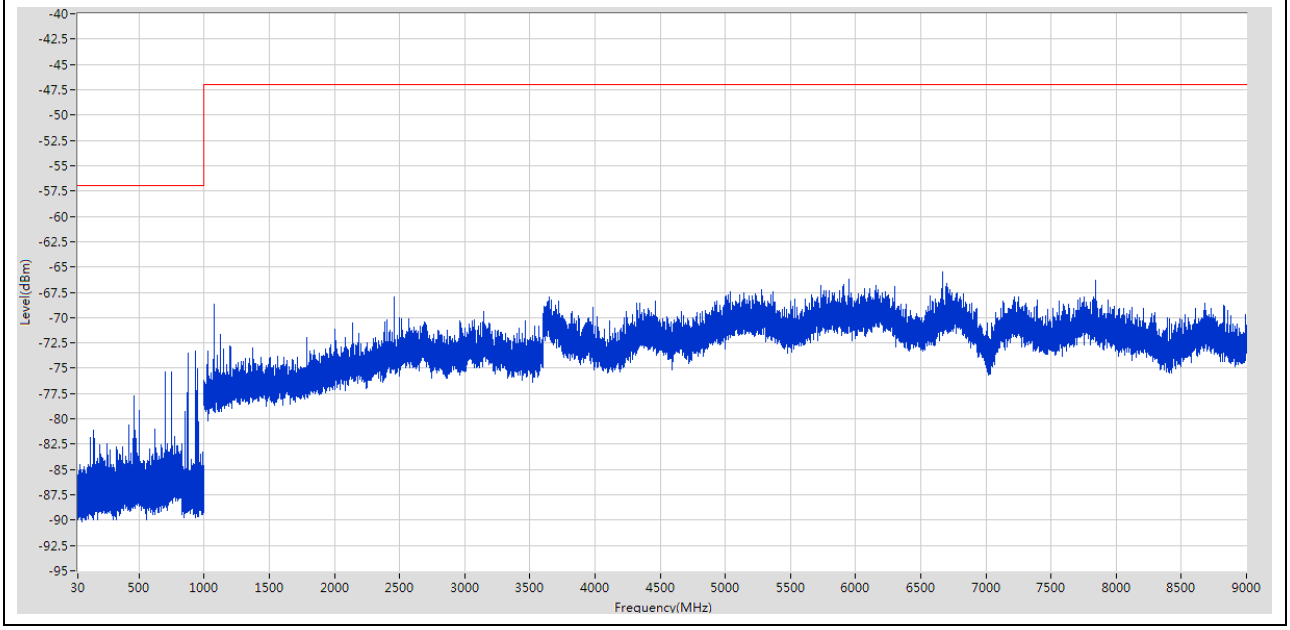
Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2 Test Plot

2.1 Conducted

2.1.1 RX

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
30	1000	0.1	Peak	936.17249 M	-73.34	-57	Pass	48500
1000	9000	1	Peak	6665.341634 M	-65.55	-47	Pass	40000



Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

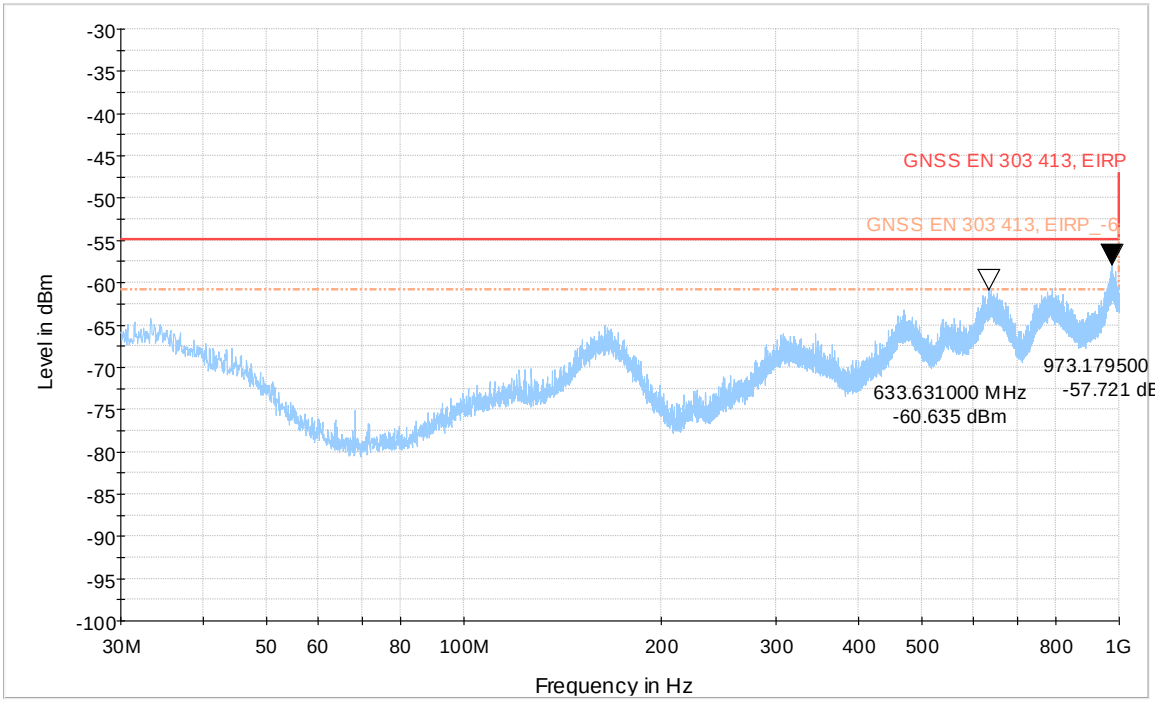
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

2.2 Radiated

2.2.1 RX

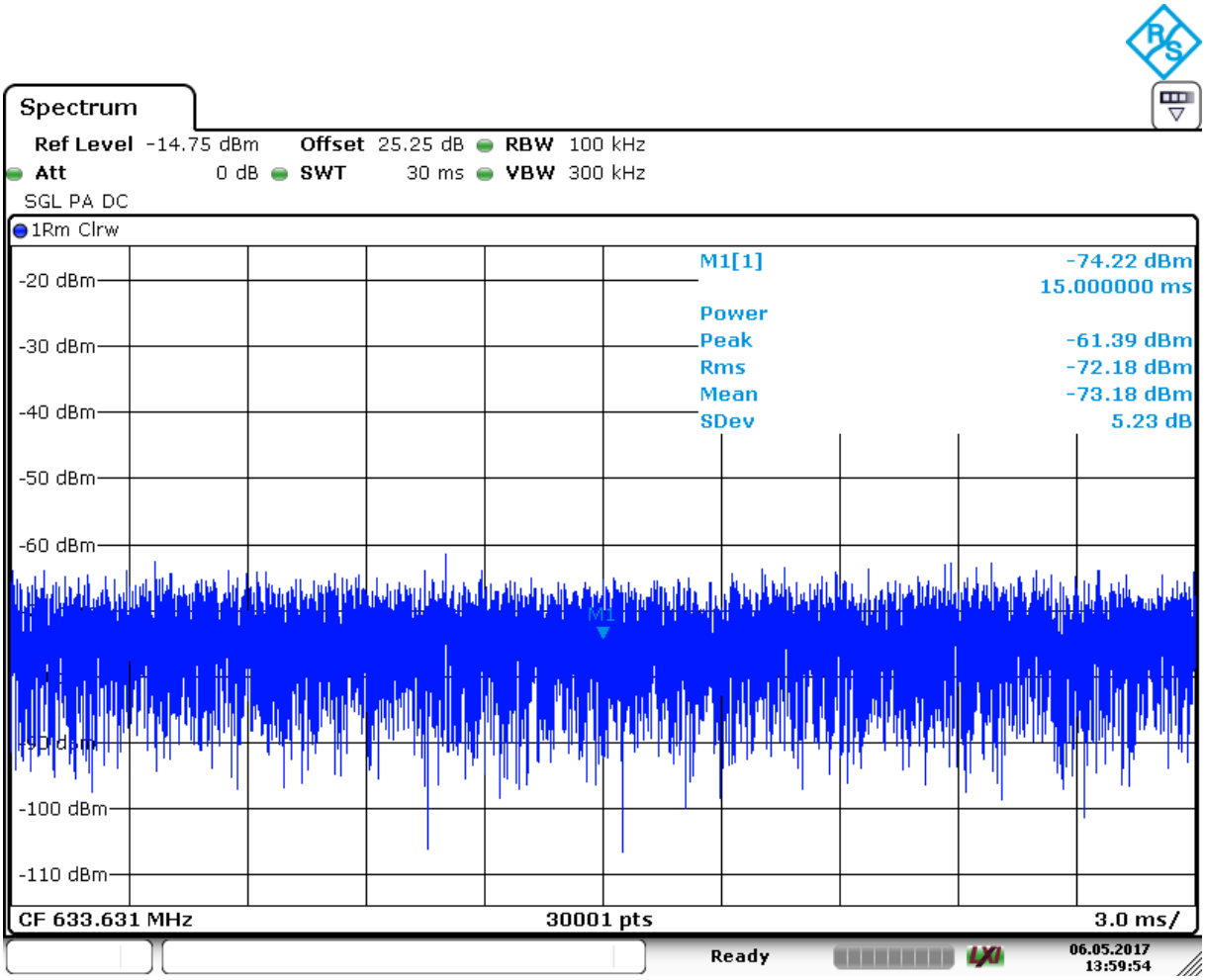
2.2.1.1 Frequency range of 30 MHz to 1 GHz



Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

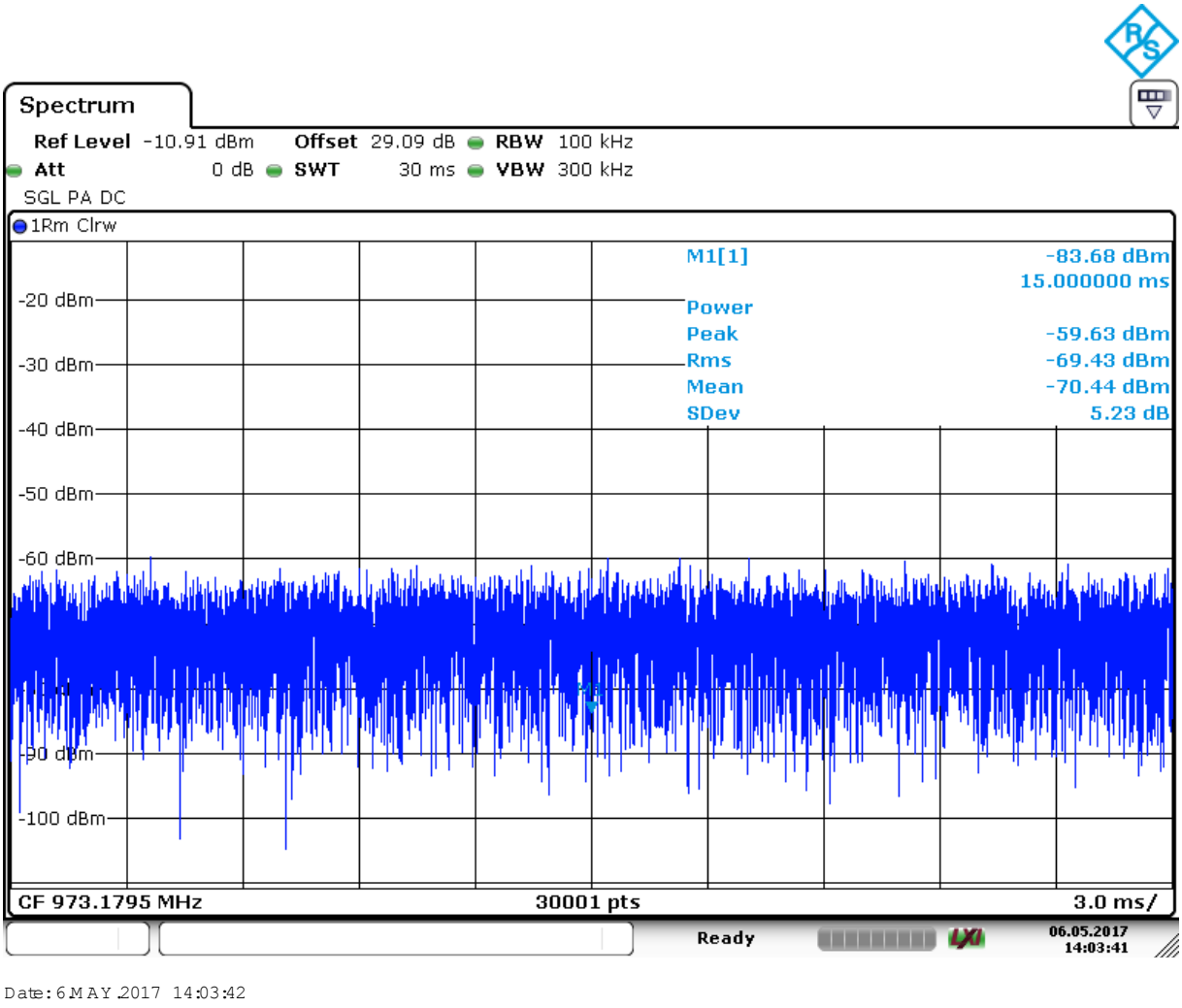


(Measured value is -72.18 dBm)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538



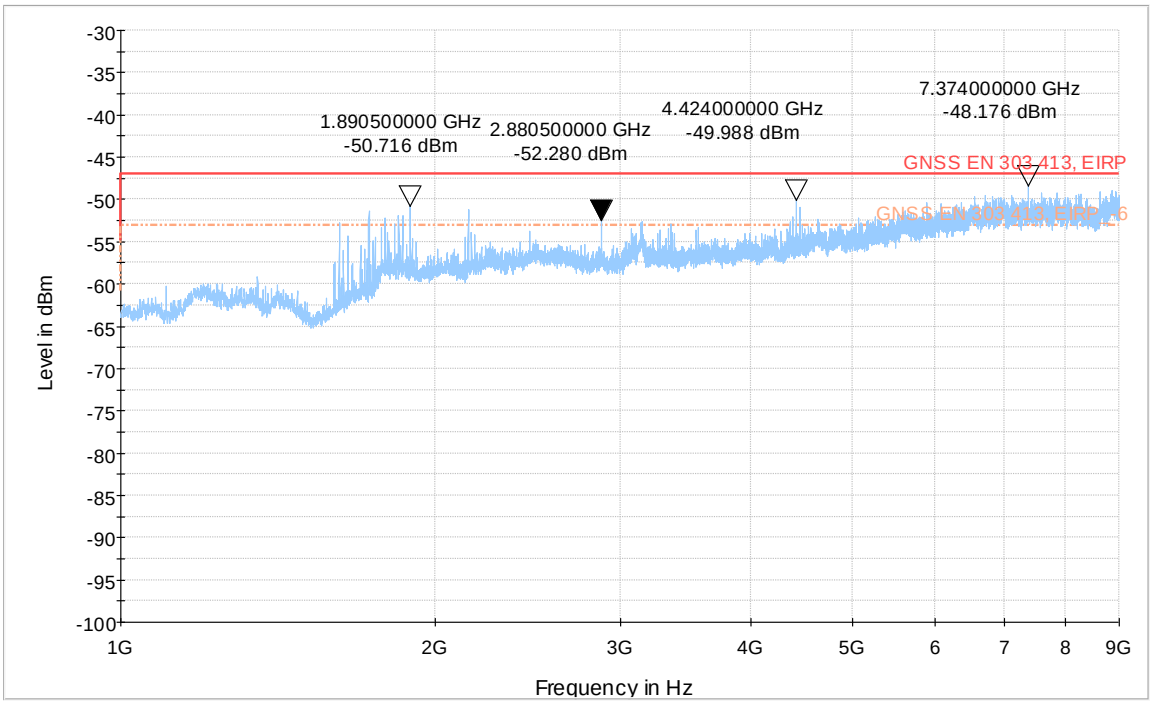
(Measured value is -69.43 dBm)

2.2.1.2 Frequency range of 1 GHz to 8.3 GHz

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

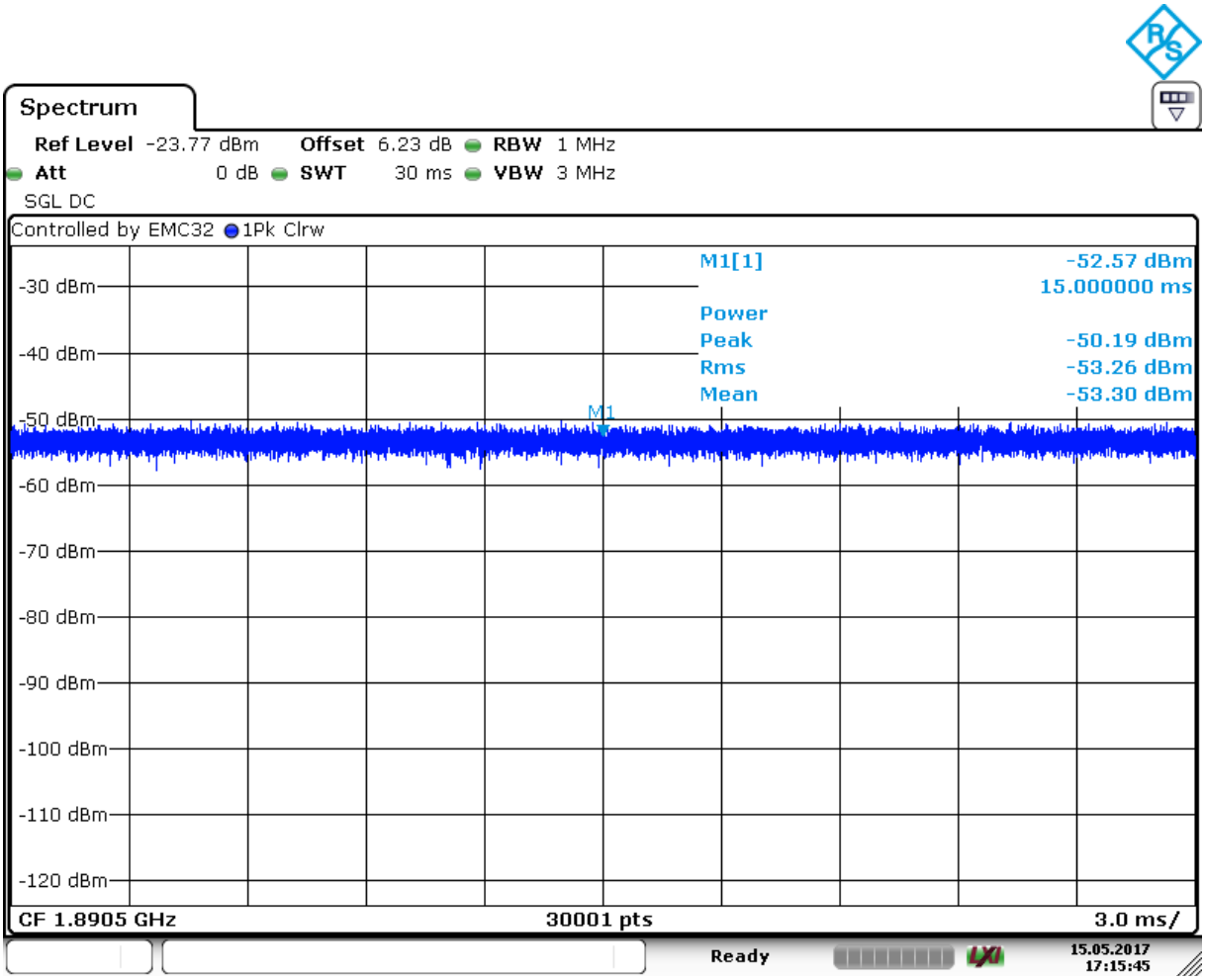
Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538



Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

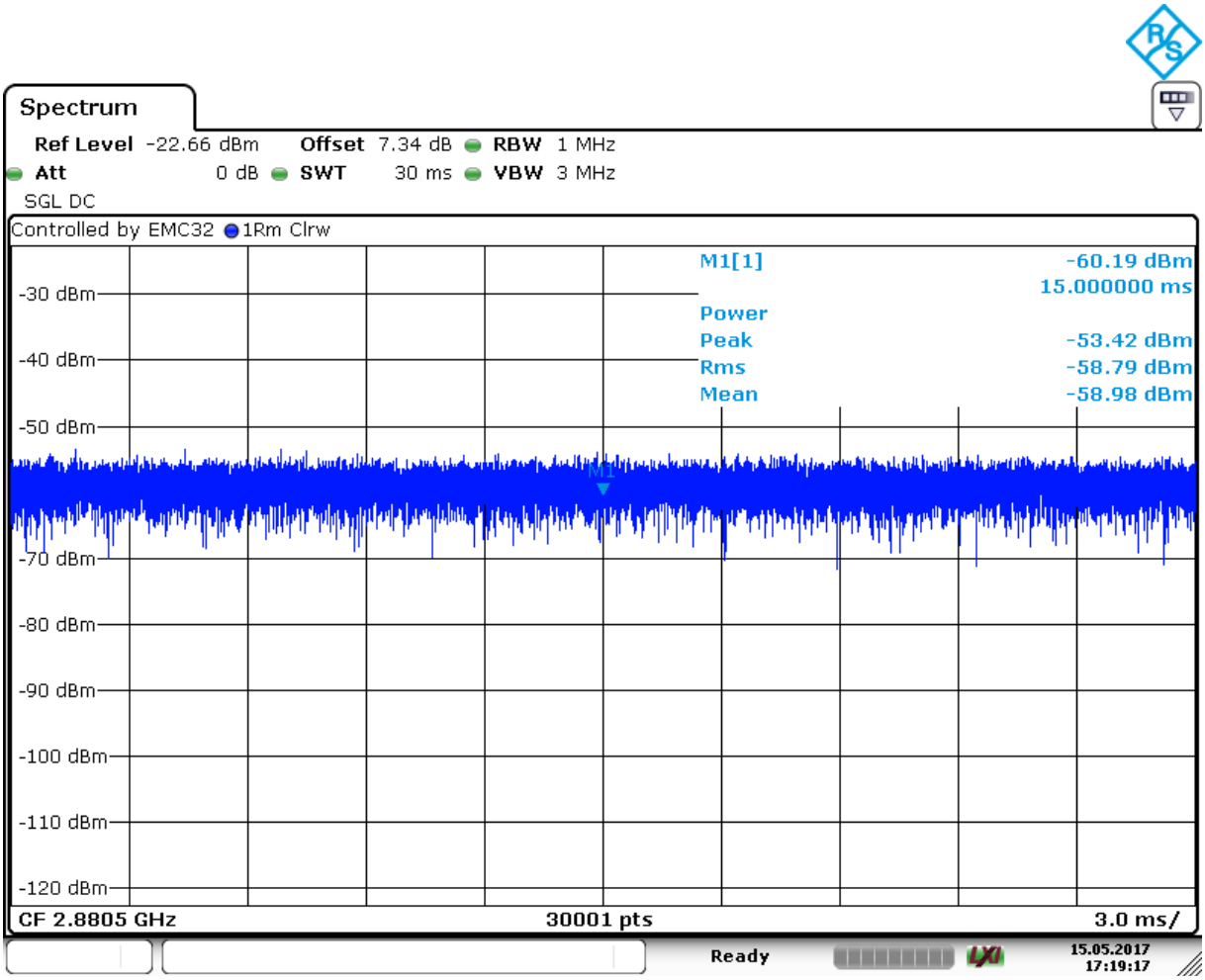


(Measured value is <-53.26 dBm)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

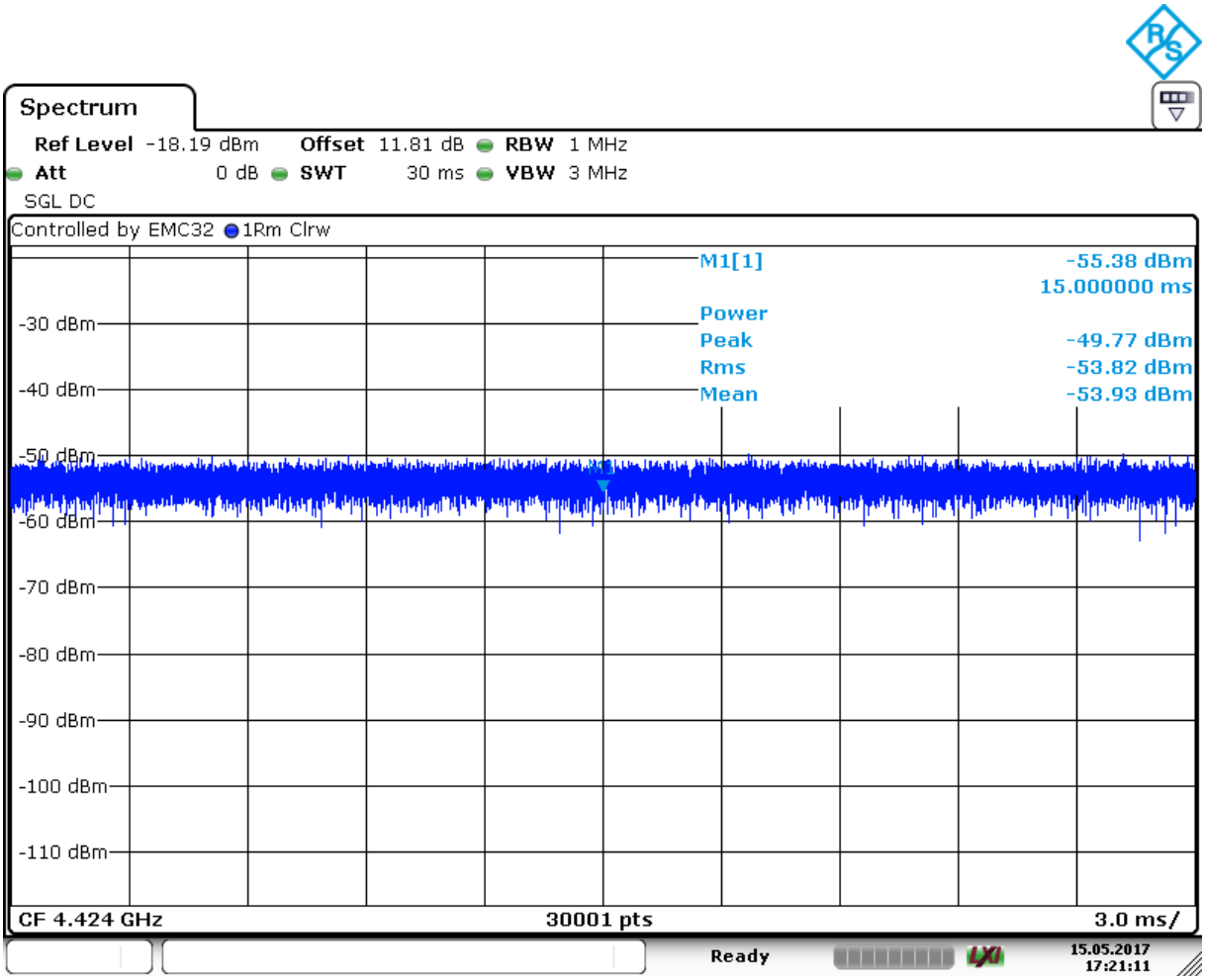


(Measured value is -58.79 dBm)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538



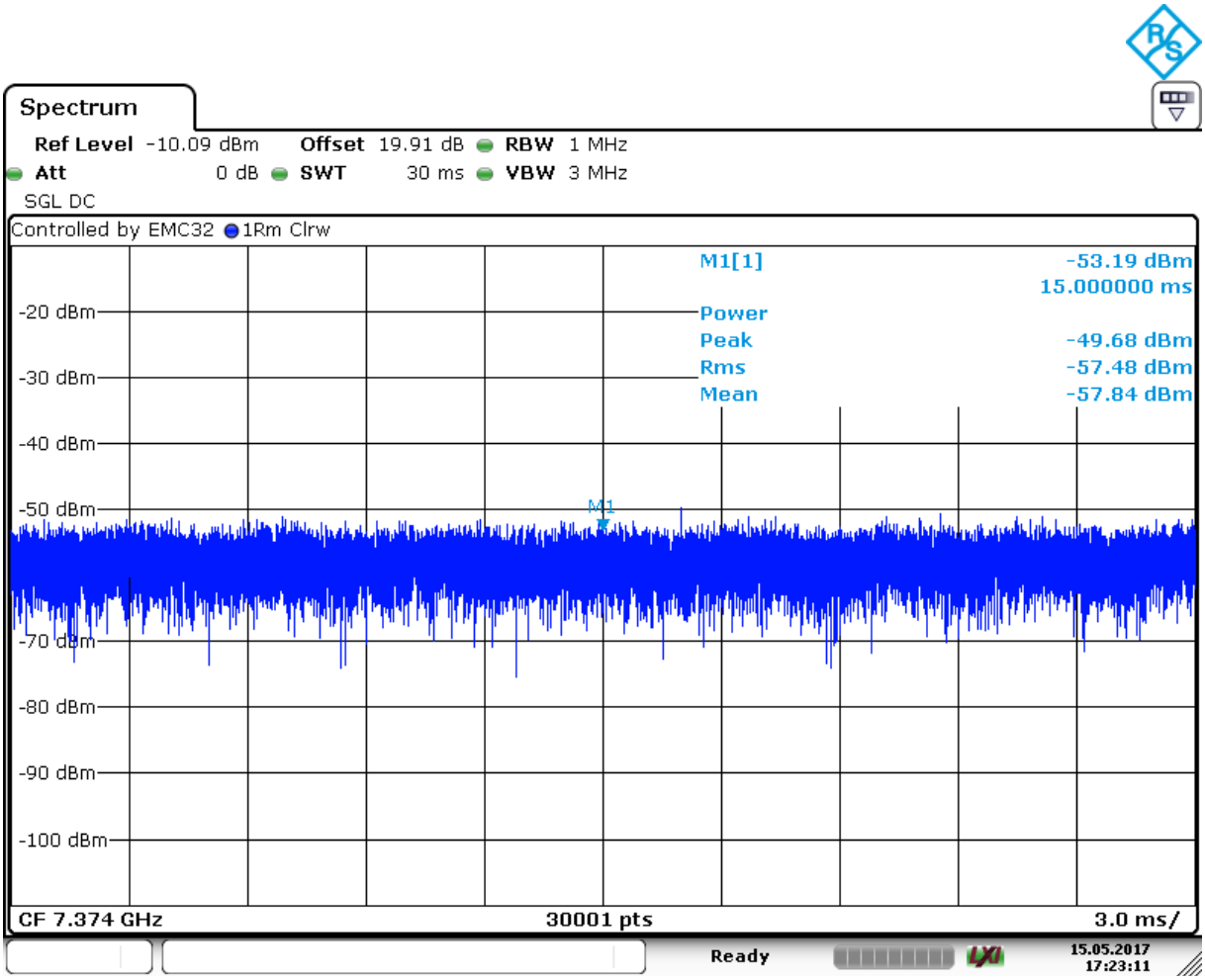
Date: 15.MAY.2017 17:21:11

(Measured value is -53.82 dBm)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538



(Measured value is -57.48 dBm)

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

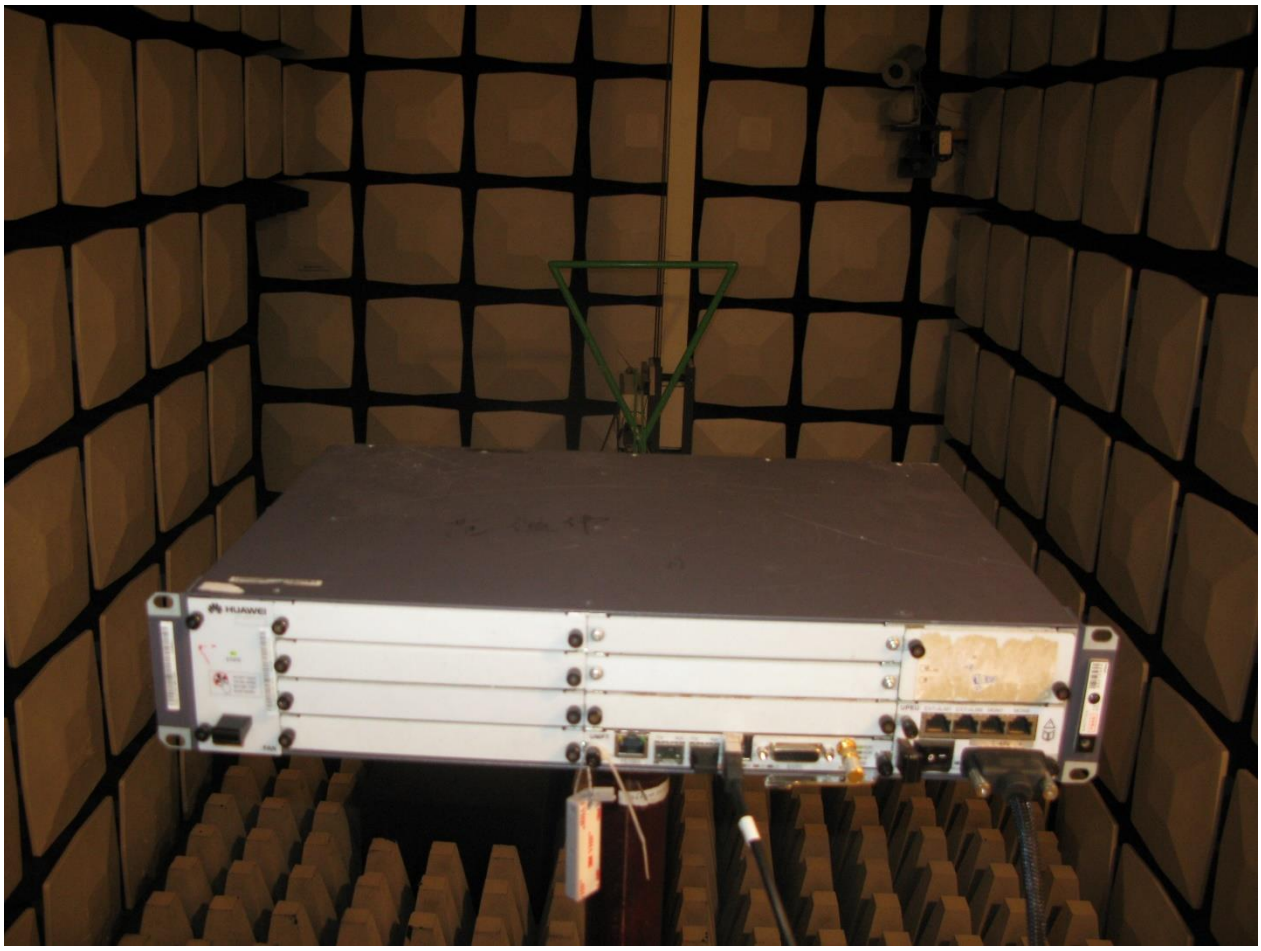
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

3 Photos of Test Setups

3.1 Radiated

3.1.1 Frequency range below 1 GHz



Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

3.1.2 Frequency range above 1 GHz

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538

(This page is intentionally left blank)

END

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,

Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/ 86-20-3205 7538